

## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Steve Roberts

**TDEC-DWS** Knoxville FO

3711 Middlebrook Pike Knoxville, TN 37921

Lab ID: K00003718

**Knoxville Regional Laboratory** 

Sampling Agency: TDEC: Division of Water Supply

**Billing Code:** 

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

Sample Description:

K00003718001

:Hq

**Project Name:** 

Kingston WTP

Chlorine, residual:

**Field Determinations** 

Conductivity: Temperature:

**Dissolved Oxygen:** 

**CFS** 

Sampler Project Name: Finish

**Project Site No.:** 

Other:

Flow:

Station No.: Date/Time Collected:

08:25

Sampler's Name:

05/17/2010 Geoff Klein

County:

ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville

**Billing Code:** 

TDEC-DWS

327.39-12

Send Report To:

TDEC-DWS

05/27/2010

**Priority Date:** Date/Time Received:

05/17/2010

12:44

Received By:

**Agency Invoiced:** 

TDEC-DWS

Ken Hitchman

TEST: Digestion Metals	MET					
ANALYTE	RESULT UNITS		MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	05/18/2010				A Wilson	5/18/2010

TEST: ICP-MS	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.82	5	M Pattanayek	5/19/2010
Barium	20	μg/L	0.26	5	M Pattanayek	5/19/2010
Beryllium	U	μg/L	0.21	1	M Pattanayek	5/19/2010
Cadmium	U	μg/L	0.5	1	M Pattanayek	5/19/2010
Chromium	υ	μg/L	0.89	5	M Pattanayek	5/19/2010
Cobalt	U	μg/L	0.36	1	M Pattanayek	5/19/2010
Lead	U	μg/L	0.51	1	M Pattanayek	5/19/2010
Manganese	U	μg/L	0.59	1	M Pattanayek	5/19/2010
Selenium	U	μg/L	1.9	5	M Pattanayek	5/19/2010
Thallium	U	μg/L	0.25	1	M Pattanayek	5/19/2010
Vanadium	U	μg/L	2	5	M Pattanayek	5/19/2010

TEST: Mercury ANALYTE	ME					
	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.038	0.2	A Wilson	5/19/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** MQL - Method Quantitation Limit

K00003718002

**Field Determinations** 

pH:

**Project Name:** Sample Description:

Kingston WTP

Chlorine, residual:

Conductivity: Temperature:

**Dissolved Oxygen:** 

Sampler Project Name: Raw

**Project Site No.:** 

Other: Flow:

MDL

**Station No.:** 

Date/Time Collected:

05/17/2010 08:30

Sampler's Name:

Geoff Klein ROANE - 73

Sample Matrix:

Water

EFO:

County:

Knoxville

Sampling Agency:

TDEC-DWS

**Billing Code:** 

327.39-12 TDEC-DWS

Send Report To: **Priority Date:** 

05/27/2010

Date/Time Received:

05/17/2010

Agency Invoiced:

Received By:

TDEC-DWS

Ken Hitchman

METHOD: EPA 200.2 TEST: Digestion Metals

12:44

UNITS **RESULT** ANALYTE

ANALYZED BY: MQL

DATE

**CFS** 

05/18/2010 **Digestion Metals** 

A Wilson

5/18/2010

TEST: ICP-MS	ME <sup>-</sup>					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.82	5	M Pattanayek	5/19/2010
Barium	20	μg/L	0.26	5	M Pattanayek	5/19/2010
Beryllium	U	μg/L	0.21	1	M Pattanayek	5/19/2010
Cadmium	U	μg/L	0.5	1	M Pattanayek	5/19/2010
Chromium	0.99J	μg/L	0.89	5	M Pattanayek	5/19/2010
Cobalt	U	μg/L	0.36	1	M Pattanayek	5/19/2010
Lead	U	μg/L	0.51	1	M Pattanayek	5/19/2010
Manganese	19	μg/L	0.59	1	M Pattanayek	5/19/2010
Selenium	U	μg/L	1.9	5	M Pattanayek	5/19/2010
Thallium	U	μg/L	0.25	1	M Pattanayek	5/19/2010
Vanadium	U	μg/L	2	5	M Pattanayek	5/19/2010

TEST: Mercury ANALYTE	ME"	THOD: EPA 24	5.1			
	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	Ŭ	μg/L	0.038	0.2	A Wilson	5/19/2010

J - Estimated value between MDL and MQL

MDL - Method Detection Limit **MQL - Method Quantitation Limit** 

K00003718003

**Field Determinations** 

:Hq

Other:

Flow:

**Project Name:** Sample Description:

Rockwood WTP

Chlorine, residual:

Conductivity: Temperature:

**Dissolved Oxygen:** 

**CFS** 

Sampler Project Name: Finish

**Project Site No.:** 

**Station No.: Date/Time Collected:** 

05/17/2010

Sampler's Name:

Geoff Klein ROANE - 73

County: Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency:

TDEC-DWS

**Billing Code:** Send Report To: 327.39-12 TDEC-DWS

**Priority Date:** 

05/27/2010

Date/Time Received:

05/17/2010

12:44

09:15

**Agency Invoiced:** 

TDEC-DWS

Ken Hitchman

Received By:

METHOD: EPA 200.2 **TEST: Digestion Metals** 

MDL MQL ANALYZED BY: DATE RESULT UNITS **ANALYTE** 

A Wilson 5/18/2010 05/18/2010 Digestion Metals

MET					
RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
U	μg/L	0.82	5	M Pattanayek	5/19/2010
25	μg/L	0.26	5	M Pattanayek	5/19/2010
U	μg/L	0.21	1	M Pattanayek	5/19/2010
U	· -	0.5	1	M Pattanayek	5/19/2010
U	μg/L	0.89	5	M Pattanayek	5/19/2010
U	μg/L	0.36	1	M Pattanayek	5/19/2010
U	• -	0.51	1	M Pattanayek	5/19/2010
U		0.59	1	M Pattanayek	5/19/2010
U		1.9	5	M Pattanayek	5/19/2010
U		0.25	1	M Pattanayek	5/19/2010
U	μg/L	2	5	M Pattanayek	5/19/2010
	RESULT  U 25 U U U U U U U U U U	RESULT         UNITS           U         μg/L           25         μg/L           U         μg/L	RESULT         UNITS         MDL           U         μg/L         0.82           25         μg/L         0.26           U         μg/L         0.21           U         μg/L         0.5           U         μg/L         0.36           U         μg/L         0.51           U         μg/L         0.59           U         μg/L         1.9           U         μg/L         0.25	RESULT         UNITS         MDL         MQL           U         μg/L         0.82         5           25         μg/L         0.26         5           U         μg/L         0.21         1           U         μg/L         0.5         1           U         μg/L         0.36         1           U         μg/L         0.51         1           U         μg/L         0.59         1           U         μg/L         1.9         5           U         μg/L         0.25         1	RESULT         UNITS         MDL         MQL         ANALYZED BY:           U         μg/L         0.82         5         M Pattanayek           25         μg/L         0.26         5         M Pattanayek           U         μg/L         0.21         1         M Pattanayek           U         μg/L         0.5         1         M Pattanayek           U         μg/L         0.36         1         M Pattanayek           U         μg/L         0.51         1         M Pattanayek           U         μg/L         0.59         1         M Pattanayek           U         μg/L         1.9         5         M Pattanayek           U         μg/L         1.9         5         M Pattanayek           U         μg/L         0.25         1         M Pattanayek

TEST: Mercury	ME	ΓHOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.038	0.2	A Wilson	5/19/2010

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003718004

**Project Name:** Sample Description:

Rockwood WTP

**Field Determinations** 

pH:

Chlorine, residual:

Conductivity: Temperature:

**Dissolved Oxygen:** 

Other: Flow:

**CFS** 

Sampler Project Name: Raw

Project Site No.:

**Station No.:** 

**Date/Time Collected:** 

05/17/2010 09:20

Sampler's Name:

Geoff Klein

County: Sample Matrix: ROANE - 73 Water

EFO:

Knoxville

Sampling Agency:

TDEC-DWS

**Billing Code:** 

327.39-12

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05/27/2010

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Agency Invoiced:

TDEC-DWS

Ken Hitchman

TEST: Digestion Metals	MET					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	05/18/2010				A Wilson	5/18/2010

TEST: ICP-MS	ME'	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.82	5	M Pattanayek	5/19/2010
Barium	23	μg/L	0.26	5	M Pattanayek	5/19/2010
Beryllium	U	μg/L	0.21	1	M Pattanayek	5/19/2010
Cadmium	U	μg/L	0.5	1	M Pattanayek	5/19/2010
Chromium	1.1J	μg/L	0.89	5	M Pattanayek	5/19/2010
Cobalt	U	μg/L	0.36	1	M Pattanayek	5/19/2010
Lead	0.56J	μg/L	0.51	1	M Pattanayek	5/19/2010
Manganese	21	μg/L	0.59	1	M Pattanayek	5/19/2010
Selenium	U	μg/L	1.9	5	M Pattanayek	5/19/2010
Thallium	U	μg/L	0.25	1	M Pattanayek	5/19/2010
Vanadium	U	μg/L	2	5	M Pattanayek	5/19/2010

TEST: Mercury	ME.	ΓHOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.038	0.2	A Wilson	5/19/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit MQL - Method Quantitation Limit** 



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TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Steve Roberts

TDEC-DWS Knoxville FO

3711 Middlebrook Pike Knoxville, TN 37921

Lab ID: K00003718

**Knoxville Regional Laboratory** 

Sampling Agency: TDEC: Division of Water Supply

**Billing Code:** 

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

K00003718001

**Project Name:** 

Sample Description:

Kingston WTP

**Field Determinations** 

pH:

Chlorine, residual:

Conductivity: Temperature:

Dissolved Oxygen:

Other:

Flow:

**CFS** 

Sampler Project Name: Finish

**Project Site No.:** 

Station No.:

Date/Time Collected:

05/17/2010

Geoff Klein

Sampler's Name: County:

**ROANE - 73** 

Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency:

TDEC-DWS

**Billing Code:** 

327.39-12

Send Report To:

TDEC-DWS

**Priority Date:** 

05/27/2010

Date/Time Received:

05/17/2010

12:44

08:25

Received By:

**Agency Invoiced:** 

Ken Hitchman

TDEC-DWS

TEST: Alkalinity, Total METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	60	mg/L	3.8	10	M Chen	5/19/2010

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	47	mg/L	0.7	1	M Chen	5/18/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003718002

**Project Name:** 

Sample Description:

Kingston WTP

**Field Determinations** 

pH:

Chlorine, residual:

Conductivity: Temperature:

**Dissolved Oxygen:** 

Other:

Flow:

**CFS** 

Sampler Project Name: Raw

**Project Site No.:** 

**Station No.:** 

**Date/Time Collected:** 

05/17/2010 08:30

Sampler's Name:

Geoff Klein ROANE - 73

County: Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency:

**TDEC-DWS** 

**Billing Code:** 

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**Priority Date:** 

05/27/2010

Date/Time Received:

05/17/2010

12:44

Received By:

**Agency Invoiced:** 

Ken Hitchman

TDEC-DWS

TEST: Alkalinity, Total METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	61	mg/L	3.8	10	M Chen	5/19/2010

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	48	mg/L	0.7	1	M Chen	5/18/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003718003

**Project Name:** 

Sample Description:

Rockwood WTP

09:15

Field Determinations

pH:

Chlorine, residual:

Conductivity: Temperature:

**Dissolved Oxygen:** 

Other:

Flow:

**CFS** 

Sampler Project Name: Finish

**Project Site No.:** 

**Station No.:** 

**Date/Time Collected:** 

05/17/2010

Sampler's Name:

Geoff Klein ROANE - 73

County: Sample Matrix:

Water

EFO: Sampling Agency: Knoxville

**Billing Code:** 

TDEC-DWS 327.39-12

Send Report To:

**TDEC-DWS** 

**Priority Date:** 

05/27/2010

Date/Time Received:

05/17/2010 12:44

Received By:

**Agency Invoiced:** 

**TDEC-DWS** 

Ken Hitchman

TEST: Alkalinity, Total ANALYTE	ME			·		
	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	57	mg/L	3.8	10	M Chen	5/19/2010

TEST: Hardness, Calcium ANALYTE	ME					
	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	53	mg/L	0.7	1	M Chen	5/18/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003718004

**Project Name:** 

Sample Description:

Rockwood WTP

pH:

**Field Determinations** 

Chlorine, residual:

Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

**CFS** 

Sampler Project Name: Raw

**Project Site No.:** 

**Station No.:** 

Date/Time Collected:

05/17/2010

Sampler's Name:

Geoff Klein

County: Sample Matrix: **ROANE - 73** Water

EFO:

Sampling Agency:

Knoxville

**Billing Code:** 

TDEC-DWS 327.39-12

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**TDEC-DWS** 

Ken Hitchman

TEST: Alkalinity, Total	ME:					
ANALYTE	RESULT	RESULT UNITS MDL		MQL	ANALYZED BY:	DATE
Total Alkalinity	61	mg/L	3.8	10	M Chen	5/19/2010

TEST: Hardness, Calcium	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	48	mg/L	0.7	1	M Chen	5/18/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit**